ETHNOBOTANICAL STUDY OF CHANGAR REGION IN DISTRICT KANGRA OF HIMACHAL PRADESH

SYNOPSIS

Submitted in partial fulfillment of the requirements for the award of the degree of

DOCTOR OF PHILOSOPHY

Submitted by

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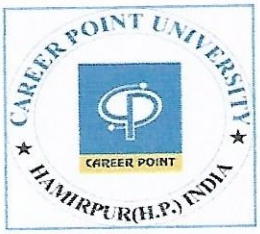

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Introduction:

Plants have been utilised for curative purposes in traditional healing system since ages. The present knowledge base of use of plants for medicinal purpose is the result of addition and enrichment of this knowledge over period of thousands of years. Use of traditional medicinal plants finds mention in ancient texts of Asia, Europe, Africa and South America. In addition to recorded traditional Indian system of medicines such as Ayurveda, Siddha Unani and Tibbetan system, traditional healing system is being used by large number of people particularly in rural, tribal and remote areas of India. An estimation by World Health Organization states that 80% of the world population depends upon traditional healing system and plants for primary health care (WHO, 2002). Ethnobotany has emerged as a well established specialized branch of Botany in the twentieth century. The term ethnobotany was coined by Harshberger (1896) to denote relationship between plants and man. Jain (1987) defined it as a traditional relationship between man and surrounding plant wealth. Turner (1995) defined ethnobotany as a Science which deals with interaction between plant and people. Cotton (1996) deals with interrelationship between plants and traditional societies. Thus it is a branch of Botany which deals with interrelationship between man and plant. Ethnobotany is concerned with various aspects of this interaction including medicinal, religious, cultural, agricultural and domestic use.

India is blessed with luxuriant plant diversity and is rich in plants having medicinal use. Primitive societies are dependent upon plants for treatment of ailments since time immemorial (Singh *et al.*, 2003). Their traditional knowledge about plants is the source of new drugs and neutraceuticals (Ghosh, 2003; Sharma and Majundar, 2003). Presently most of the rural and tribal communities of third world depend upon local traditional system of treatment for their primary healthcare (Singh, 2016). In India traditional healers use 2500 plants out of which 100 species of plants are regularly used for medicinal purposes (Pei, 2001). Most of indigenous people including tribals use plants for curing various ailments (Patel, 2016). The local communities have rich knowledge of traditional use of plants as medicine. This knowledge has been passed from generation to generation for centuries.

The Himalayan region is a repository of medicinal plants and traditional medicinal knowledge. Indian state of Himachal Pradesh located in Western Himalayas has rich floral diversity and is a hot spot of medicinal plant wealth (Daliwal and Sharma, 1999; Singh, 1999). Rich floral diversity and traditional folklore medicinal knowledge makes Himachal Pradesh suitable for ethnobotanical exploration.

Literature Review:

Significant work has been carried out on ethnobotany in different parts of world and India. Duke (1970, 1975) described ethnobotanical practices of Choco Indians and Cuna Indians. Kambizi and Afolayn (2001) studied ethnobotany of plants used in the treatment of sexually transmitted disease in Zimbabwe. Hilaly *et al.* (2003) studied importance of medicinal plants in Northern Morocco. Rehman *et al.* (2017) investigated 101 ethnomedicinal plants belonging to 36 families and Hassan *et al.* (2017) investigated 52 ethnomedicinal plants of 33 families in Pakistan. Faruque *et al.* (2018) described 159 ethnomedicinal plant species of 62 families in Bangladesh. Das *et al.* (2021) explained 60 medicinal plants belonging to 37 families for treating ailments in Nepal.

In India work on ethnobotany was initiated by Dr. E.K. Janaki Ammal while working in Botanical Survey of India (Sreedevi *et al.*, 2013). Jain (1963a,b) nurtured the field of ethnobotany in India. Many workers contributed to the field of ethnobotany in India like Dam and Hajra (1981) in Arunachal Pradesh, Ghosh (1986) in West Bengal, Rao (1990) in Nagaland and Shrivastava *et al.* (1999) in Madhya Pradesh. Gautam and Batra (2014) studied 49 plant species used by traditional practitioners in Mount Abu, Rajasthan. Singh (2016) explained 30 ethnomedicinal plants of 20 families in Bhiwani, Haryana. Pronob (2016) studied 12 plants belonging to 11 families used for treatment of piles in Sivasagar, Assam. Asif *et al.* (2021) described 29 ethnomedicinal plant species in Kupwara, Jammu and Kashmir. Prabhu *et al.* (2021) studied 103 plant species of 52 families for treating ailments in Tamilnadu.

In Himachal Pradesh, Uniyal and Chauhan (1971, 1972) conducted studies on important medicinal plant of the Kullu and Kangra respectively. Chauhan (1999) worked on aromatic and medicinal plants of Himachal Pradesh. Singh and Kumar (2000) conducted ethnobotanical studies on western Himalya's Gaddi tribe. Sharma *et al.* (2003) studied

medicinal and commercially important plants of Parvati Valley, Kullu. Lal and Singh (2008) studied indigenous plant knowledge of people of Lahaul Spiti in curing skin problems. Kharwal and Rawat (2012) conducted ethnobotanical studies on herbal shampoo in Kangra. Rani *et al.* (2013) described 30 ethnomedicinally important plant species for treating diseases in district Kangra. Sharma *et al.* (2014a, b) described ethnomedicinal plants of sacred groves of Kangra. Chand *et al.* (2016) described 159 ethnomedicinal plant species of 68 families in Hamirpur and Una districts. Kumari *et al.* (2018) reported 404 medicinal plant species of 111 families in central Himachal Pradesh. Rana *et al.* (2019) reported 83 plant species belonging to 49 families in district Chamba. Radha *et al.* (2019) studied 78 ethnomedicinal plant species used in western Himalayas. Radha *et al.* (2021) described 40 ethnomedicinal plants belonging to 25 families in Mandi, Himachal Pradesh.

Research Gap Identification:

Review of literature reveals that many ethnobotanical studies have been conducted in district Kangra. But no ethnobotanical work is done in Changar region of district Kangra. The region has distinct topography and rural, tribal people of the region use local plant for various purposes which have not been documented so far. So there is need to conduct research work in the region on following aspects:

1. Identification of traditional plant use practices and plants used to bring in light ethnobotanical knowledge.
2. Documentation and analysis of ethnobotanical information obtained from local healer to conserve this information for future generations for further studies and as potential source for new drugs.
3. Study of utilisations pattern of important ethnomedicinal plants.

Objectives:

The objectives of the research on ethnobotanical plants of Changar region in district Kangra of Himachal Pradesh are:

1. To study the diversity of ethnobotanical plants.
2. To document indigenous uses of ethnobotanical plants.
3. To document utilisation pattern of ethnomedicinal plants.

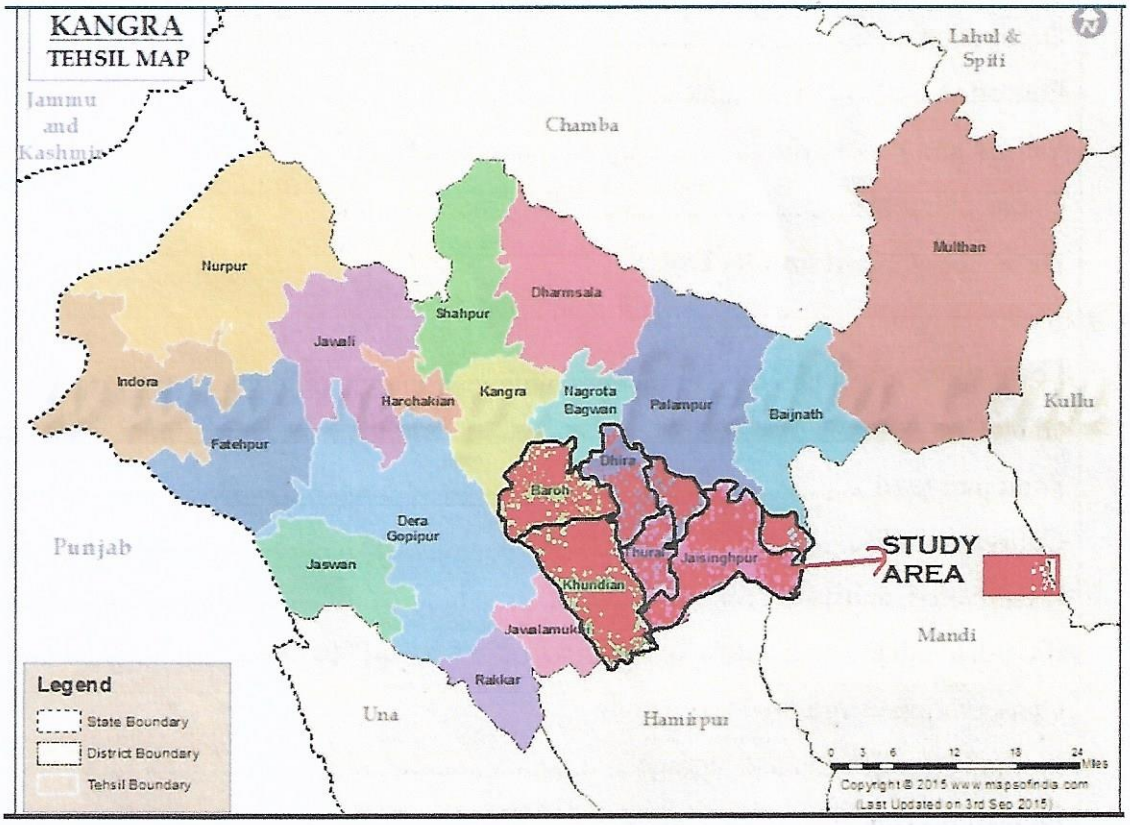
Proposed Methodology:

Study area:

The study area Changar is located in district Kangra which is the most populous district and fourth largest district area wise in Himachal Pradesh. It is situated in Shivalik hills, in southeastern part of district Kangra. Changar in local dialect means remote and rugged terrain prone to water scarcity. Changar area stretches across Khundian, Baroh, Thural, Dhira, Jaisinghpur and Palampur Tehsils of district Kangra. Changar area lies in Shivalik ranges of Himalayas. The area is slightly elevated as compared to surrounding valley. It has steep slopes and ridges. The altitude of region ranges between 700m-1300m (Kotru,1997). The area receives an average rainfall of 1860mm out of which 65% is lost due to runoff because of steep slopes. In previous times the Changar area remained isolated from surrounding plains due to tough Terrain and meagre road network and connectivity. So the ethnobotanical practices of the people of area remained distinct. Many hemlets o Changar area belong to Tribal community, Gujjar who are known for their distinct ethnobotanical knowledge of practices. This region has rich diverse flora and is suitable for ethnobotanical studies. Keeping this in view, the present study is planned to explore ethnobotany of Changar, district Kangra, Himachal Pradesh. The results of the present study are expected to bring in light the distinct ethnobotanical practices and medicinal wealth of Changar area, district Kangra and propagate the traditional ethnomedicinal knowledge which is feared to got depleted mainly due to modernization and decreasing number of knowledgeable informants.

Data collection:

For collecting information of ethnobotanical plants, the study area will be surveyed. Information on uses of ethnobotanical plants will be collected from local healers called Vaids, old experienced people, native knowledgeable people and people from tribal Gujjar community through questionnaire, interviews and discussions. Questionnaire will be based upon the performa given by Jain and Goel (1995) and information obtained will be properly recorded including name and altitude of locality. People will be interacted local dialect Kangri.



Location Map of Changar region (District Kangra, Himachal Pradesh)

(Source of map-www.mapsofindia.com,2015)

The ethnobotanically important plants will be collected seasonally in flowering or fruiting stage with the help of local knowledgeable person. The plant specimen will be identified with the help of local and regional flora and also through online database and Herbaria. Photographs of plant species will be also clicked in the field. Collected ethnobotanically important plants will be dried, preserved and mounted as per harborizing practices (Jain and Rao, 1977). Data will be tabulated including Botanical name, synonym, local name, English and Hindi name, family, description, distribution, reproductive cycle, Habitat Ecology, Part used and Folk uses.

Questionnaire for Collecting Ethnobotanical Data

Informants' details:

Name.....

Gender.....

Age.....

Age Group:13-19 Years ☐ 19-40Years ☐ 40-60 Years ☐ > 60 Years ☐

Occupation.....

Education.....

Village and Panchayat.....

Contact Number.....

Data About Plant and its Use:

Local name of plant.....

Habit.....

Plant part used.....

Cultivated/ Wild.....

If cultivated, cultivated for.....

If wild, availability in nature (easy/ difficulty/ very difficult).....

Conservation efforts by local people

Method of collection and storage.....

Indigenous use.....

Name of ailment treated.....

Method of crude drug preparation.....

Mode of Use.....

Other uses (if any).....

Remarks:

Plant identified as.....(Botanical name and Family)

- Data will be statistically analysed using various quantitative data analysis tools like Informant Consensus Factor, Use Value, Relative Frequency of Citation and Fidelity level.

Informant Consensus Factor (F_{ic}): The informant Consensus Factor will be calculated to know the agreement on the use of plants in various illness catagories among the informants.

It is calculated by using the Formula:

$F_{ic} = N_{ur} - N_t / N_{ur} - 1$

Where N_{ur} refers to the number of used reports for an ailment category. N_t refers to the number of plant species used for an ailment category (Heinrich *et al.*, 1998).

Use Value (UV): Use Value will be calculated to know the relative importance of use of each plant species.

It is calculated by using the Formula:

$UV = U/N$

Where U is the number of uses reported for a plant species. N is number of informants who reported the species (Phillips *et al.*, 1994).

Relative Frequency of Citation (RFC): Relative Frequency of Citation will be calculated to know the local importance of medicinal species in the study area.

It is calculated using Formula:

$RFC = FC/N$

Where FC is the number of informants citing use of plant species. N is total number of informants in the survey (Tardio and Pardo-de-Santayana, 2008).

Fidelity Level (FL): Fidelity Level will be calculated to know the plant species most used for the treatment of a particular ailment.

It is calculated by using the Formula:

$FL\ (\%) = N_p / N \times 100$

N_p is the number of use of plant species for a particular ailment category. N is the number of informants who cited the use of that plant species (Friedman *et al.*, 1986).

Thesis Outline:

Chapter I: Introduction- This chapter will contain introduction of the selected topic and highlighting the importance of work. It will also include the objectives of current research work.

Chapter II: Literature Review- This chapter will include an extensive review of literature highlighting previous research work and methodologies adopted. The chapter will also contain research gap identification of current research.

Chapter III: Methodology- This chapter will contain description of the study area and methodology adopted in present research.

Chapter IV: Results and Discussion - This chapter will present the results of current research work and the results will be compared with previous research.

Chapter V: Summary and Conclusion- This chapter will provide summary and conclusion based on research and discussion.

Chapter VI:References-This chapter will enlist resources that will be referred within the body of the research work.

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(SYNOPSIS APPROVAL CERTIFICATE)

This is to certify that the Revised Synopsis for Ph.D. Thesis Titled, "Ethnobotanical Study of Changar Region in District Kangra of Himachal Pradesh", submitted by **Mr. Bhagwati Prashad Sharma** to the Career Point University, Hamirpur (H.P.), India in partial fulfillment of the requirements for the degree of **DOCTOR OF PHILOSOPHY** in the Division of Botany, Department of Bio Sciences, School of Basic and Applied Sciences has been approved by the Research Advisory Committee (RAC) after an Oral Examination of the student on dated 10.02.2021.

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